three-dimensional object is obtained, characterized in that the photohardenable resin composition has a melting temperature ranging from 5 to 90°C when unhardened, and in at least a part of said photohardened layer forming/laminating process, under a state that an unhardened photohardenable resin layer forming the same surface as a photohardened layer which has been already formed is kept solid at a temperature less than the melting temperature, a layer of photohardenable resin composition is formed on the surface of the solid photohardenable resin composition layer, and the photohardenable resin composition layer is exposed to light controlled on the basis of stereolithographic data to laminate a photohardened layer on the solid photohardenable resin composition layer; and

a step of heating the three-dimensional object thus obtained up to a temperature above the melting temperature of the photohardenable resin composition to liquefy the solid photohardenable resin composition layer after said photohardened layer forming/laminating step is completed, and separating the liquefied unhardened photohardenable resin composition from the three-dimensional object to thereby obtain a desired three-dimensional object.

63 (New). A stereolithographic method including

a photohardened layer forming step of exposing a photohardenable resin composition layer to light controlled on the basis of stereolithographic data to harden the photohardenable resin composition layer, thereby forming a photohardened layer having predetermined pattern and thickness;

a photohardened layer forming/laminating step for forming a photohardenable resin composition layer on the photohardened layer formed in said photohardened layer forming step, exposing the photohardenable resin composition layer to light controlled on the basis of stereolithographic data to laminate a subsequent photohardened layer on the preceding photohardened layer, and repeating the lamination of a subsequent photohardened layer on a preceding photohardened layer until a desired three-dimensional object is obtained, characterized in that the photohardenable resin composition has a melting temperature ranging from 5 to 90°C when unhardened, and in at least a part of said photohardened layer forming/laminating process, under a state that an unhardened photohardenable resin layer forming the same surface as a photohardened layer which has been already formed is kept solid at a temperature less than the melting temperature, a layer of photohardenable resin composition is formed on the surface of the solid photohardenable resin composition layer, and the photohardenable resin composition layer is exposed to light controlled on the basis of stereolithographic data to laminate a photohardened layer on the solid photohardenable resin composition layer; and

a step of dissolving the solid photohardenable resin composition layer with solvent after said photohardened layer forming/laminating step is completed, and separating the liquefied photohardenable resin composition from the three-dimensional object to thereby obtaining a desired three-dimensional object.

64 (New). The stereolithographic method according to claim 62, wherein the photohardenable resin composition has a melting temperature ranging from 15 to 80°C.

65 (New). The stereolithographic method according to claim 62, wherein when a layer of photohardenable resin composition is supplied onto the surface of a mount table and/or a solid photohardenable resin composition layer forming the same surface as a photohardened layer which has been already formed and then exposed to light, any one of the following methods is used:

(a) a method of supplying a photohardenable resin composition in a liquid form, exposing the photohardenable resin composition to light under control to form a photohardened layer having predetermined pattern and thickness;

(b) a method of supplying a photohardenable resin composition in a liquid form, cooling the photohardenable resin composition to a temperature less than the melting temperature to solidify the photohardenable resin composition and then exposing the surface of the solid photohardenable resin composition to light under control to form a photohardened layer having predetermined pattern and thickness;

(c) a method of supplying a photohardenable resin composition in a solid state, heating the photohardenable resin composition up to a temperature above the melting temperature to liquefy the solid photohardenable resin composition, and then exposing the liquid surface of the liquefied photohardenable resin composition to light under control to form a photohardened layer having predetermined pattern and thickness; and

(d) a method of supplying a photohardenable resin composition in a solid state, and then exposing the surface of the solid photohardenable resin composition to light under control to form a photohardened layer having predetermined pattern and thickness.

66 (New). The stereolithographic method according to claim 62, further comprising:

a first step of irradiating light under control to the surface of liquid photohardenable resin composition on a mount table to form a photohardened layer having predetermined pattern and thickness;

a second step of keeping a photohardenable resin composition layer forming the same surface as the photohardened laver formed in said first step at a temperature less than the melting temperature of the photohardenable resin composition to solidify the photohardenable resin composition layer;

a third step of supplying a layer of photohardenable resin composition in a liquid state on the solid photohardenable resin composition layer formed in said second step, and irradiating light under control to the surface of the liquid photohardenable resin composition layer to form a photohardened layer having predetermined pattern and thickness on the photohardened layer formed in said first step;

a fourth step of keeping a photohardenable resin composition resin layer forming the same surface as the photohardened layer formed in said third step at a temperature less than the melting temperature thereof to solidify the photohardenable resin composition resin layer; and

a fifth step of supplying a layer of photohardenable resin composition in a liquid state on the solid photohardenable resin composition resin layer formed in said fourth step and irradiating light under control to the surface of the liquid photohardenable resin composition layer to form and laminate a photohardened layer having predetermined pattern and thickness on the photohardened layer formed in said third step, said fourth

step and said fifth step being repeated until a desired three dimensional object is formed.

67 (New). The stereolithographic method according to claim 62, further comprising:

a first step of supplying photohardenable resin composition in a liquid state onto a mount table and then cooling the photohardenable resin composition to a temperature less than the melting temperature thereof to solidify the photohardenable resin composition;

a second step of irradiating light under control to the surface of the photohardenable resin composition solidified in said first step to form a photohardened layer having predetermined pattern and thickness;

a third step of supplying a layer of photohardenable resin composition in a liquid state onto the solid photohardenable resin composition layer under cool after said second step;

a fourth step of cooling the photohardenable resin composition supplied in said third step to a temperature less than the melting temperature thereof to solidify the photohardenable resin composition; and

a fifth step of irradiating light under control to the surface of the photohardenable resin composition layer solidified in said fourth step to form a photohardened layer having predetermined pattern and thickness, said third step, said fourth step and said fifth step being repeated until a desired three-dimensional object is formed.

68 (New). The stereolithographic method according to claim 62, further comprising:

a first step of supplying photohardenable resin composition in a solid state on to a mount table, heating the photohardenable resin composition up to a temperature above the melting temperature thereof to liquefy the photohardenable resin composition, and then exposing light under control to the surface of the liquid photohardenable resin composition to form a photohardened layer having predetermined pattern and thickness;

second step of keeping a photohardenable resin composition layer forming the same surface as the photohardened layer formed in said first step at a temperature less than the melting temperature thereof to solidify the photohardenable resin composition layer;

a third step of supplying a layer of photohardenable resin composition onto the solid photohardenable resin composition layer formed in said second step; and

a fourth step of heating the photohardenable resin composition layer supplied in said third step up to a temperature above the melting temperature thereof to liquefy the photohardenable resin composition layer, and then irradiating light under control to the liquid photohardenable resin composition layer to form a photohardened layer having predetermined pattern and thickness, said third step and said fourth step being repeated until a desired three-dimensional object is formed.

69 (New). The stereolithographic method according to claim 62, further comprising:

a first step of supplying photohardenable resin composition in a solid state onto a mount table, and exposing light under control to the surface of the solid

photohardenable resin composition to form a photohardened layer having predetermined pattern and thickness;

a second step of supplying a layer of solid photohardenable resin composition while the photohardenable resin composition layer forming the same surface as the photohardened layer formed in said first step is kept solid at a temperature less than the melting temperature thereof; and

a third step of irradiating light under control to the surface of the solid photohardenable resin composition layer supplied in said second step to form a photohardened layer having predetermined pattern and thickness, said second step and said third step being repeated until a desired three dimensional object is formed.

70 (New). A stereolithographic apparatus comprising:

supply means of successively supplying a layer of photohardenable resin composition onto a mount table or a photohardened layer formed by hardening photohardenable resin composition;

stereolithography means having a light irradiation device for repeating formation /lamination of photohardened layers each having predetermined pattern and thickness under control until a desired three dimensional object is formed;

temperature adjusting means for setting the temperature of the photohardenable resin composition to a temperature less than the melting temperature thereof; wherein said temperature adjusting means is cooling means having control means for keeping, at a temperature less than the melting temperature of the photohardenable resin composition, a photohardenable resin composition layer forming the same surface as a

photohardened layer which has been already formed, in the overall or a part of the stereolithographic process; and

heating means for heating unhardened photohardenable resin composition existing in an optical stereolilthographic system up to a temperature above the melting temperature thereof at some midpoint of or after the end of the stereolithographic process.

71 (New). The stereolithographic apparatus according to claim 70, wherein the photohardenable resin composition has a melting temperature ranging from 5 to 90°C when hardened.

72 (New). The stereolithographic method according to claim 62, wherein the photohardenable resin composition is formed by mixing urethaneacrylate compound, morpholine acrylamide and 2,2-bis[4-(acryloxy-diethoxy)phenyl]propane, subjecting the mixture to nitrogen-substitution under reduced-pressure, adding photoinitiator for radical polymerization under UV-cut environment, and stirring the mixture at a predetermined temperature until the mixture is perfectly solved.

73 (New). The stereolithographic method according to claim 63, wherein the photohardenable resin composition is formed by mixing urethaneacrylate compound, morpholine acrylamide and 2,2-bis[4-(acryloxy-diethoxy)phenyl]propane, subjecting the mixture to nitrogen-substitution under reduced-pressure, adding photoinitiator for radical

polymerization under UV-cut environment, and stirring the mixture at a predetermined temperature until the mixture is perfectly solved.

74 (New). The stereolithographic apparatus according to claim 70, wherein the photohardenable resin composition is formed by mixing urethaneacrylate compound, morpholine acrylamide and 2,2-bis[4-(acryloxy-diethoxy)phenyl]propane, subjecting the mixture to nitrogen-substitution under reduced-pressure, adding photoinitiator for radical polymerization under UV-cut environment, and stirring the mixture at a predetermined temperature until the mixture is perfectly solved.

REMARKS

Claims 62-74 will be pending in this application upon entrance of this amendment. Claims 1-42 and 44-61 (there is no claim 43 in the specification as originally filed) have been canceled without admission and without prejudice to Applicants' right to pursue the subject matter of those canceled claims in either this or other (*e.g.*, related) patent applications. New claims 62-74 have been added.

Claims 62-74 correspond to Group III claims (see October 10, 2001 restriction requirement) in parent application Ser. No. 09/557,257.

The amendments are fully supported in the application as originally filed and do not contain new matter. In particular, support for new claim 62 can be found, for example, at claims 50 and 52 as originally filed; support for new claim 63 can be found, for example, at claims 50 and 53 as originally filed; support for new claim 64 can be found, for example, at claim 51 as originally filed; support for new claim 65 can be